

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### Tensioning Device for Kettle Drums

I, HENRY WALTER TAYLOR, of 170, Marvels Lane, Grove Park, London, S.E.12, of British Nationality, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a Tensioning device for kettle drums, for the simultaneous and/or the individual "tempering" of the tensioning elements distributed around the kettle head.

There exist already several devices having as their object a mechanism for tuning a kettledrum by the operation of a single tensioning device instead of laboriously adjusting one after another of the usual six or more individual tensioning elements around the drum. These known mechanisms have certain drawbacks. They are rather cumbersome and usually become an obstacle in the way of the player. They are not suitable for an easy changeover from simultaneous tensioning to individual tensioning of the elements. They cannot easily be discarded in an emergency to convert the drum into a normal hand-tuned instrument.

The possibility of tuning by individual tensioning must always be taken into account, as parts of an animal skin vary in thickness, density and elasticity and, therefore, require minute adjustments at some point or points around its circumference without affecting the balance of the whole. If in theory, for instance, a force "x" was necessary to obtain a perfect "C", and an additional force "y" would be necessary to obtain a perfect "F", then x+y should result in a perfect "F". In practice, this is not so because of the vagaries of the various skins. Individual or "tempered" tuning with tuning handles is, therefore, a necessity, especially with regard to the harmonics which are desirable, and which if untrue, offend a sensitive ear. Extremely high and low notes cannot be

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correctly produced by any mechanical device which relies *only* upon "even" or "equal" tensioning from the nodal centre of the drum-head to any point around its circumference.

According to the invention, the object of easy simultaneous and/or individual tensioning is achieved by the arrangement of a clutch in each and every tensioning element, and a device simultaneously affecting all individual elements. This clutch may operate through friction. The individual tensioning rods may be connected by a chain leading over sprocket wheels freely rotatable about each rod, to be coupled with the rod by means of clamping nuts and/or locking nuts which may be knurled, or winged for finger and thumb, screwed on the threaded rod. Disconnection simply by loosening a nut will enable the player to turn the loosened rod, which after adjustment, would be again coupled with the sprocket wheel. The chain itself remains stationary while adjusting the tension of one rod or of several rods. When all rods are coupled with their respective sprocket wheels, the turning of one rod, or preferably two "opposite" rods, causes an equal turn of all other rods, i.e. simultaneous tensioning around the whole drum head.

To prevent the mechanical tensioning device from hampering the player, according to another aspect of the invention, the chain is arranged below the level of the drum head. This is possible without making individual adjustment less easy, as the player has only to loosen, and then to tighten again, one unit in easy reach of his hands, either above or below a sprocket wheel, to disengage and to re-connect the particular tensioning rod. Contact with grease from the chain, by the player's hands or clothes is thereby avoided. The chain however, must be under a certain tension to remain in position, which is produced, according to a further aspect of the invention, by a jockey wheel mounted on a slide along the horizontal arm of a bracket

arranged on the drum body between two tensioning elements. This slide is fixed in the adjusted position by a wing nut so that slackening of the nut gives the slide free play and enables the player to remove the chain desired or merely by loosening all locking nuts clamping sprocket wheels to rods. The sprockets and chain then become inoperative. The drum is thus convertible into a normal hand-tensioned instrument without requiring any further operation as in this case no disengagement of a sprocket wheel is necessary and all the tensioning rods carry their tuning handles permanently on top whether arranged for individual tuning or for simultaneous tensioning.

One practical embodiment of the invention is shown by way of example in the accompanying drawing, in which:—

Fig. 1 is a perspective view of a kettledrum according to the invention;

Fig. 2 is a top plan view of the drum as shown in Fig. 1;

Fig. 3 is a cross-section through one of the brackets and the adjacent broken-off part of the drum;

Fig. 4 is a side view; and

Fig. 5 is a top plan of the jockey-wheel unit.

In all the figures, 1 is the drum body and 2 the skin pulled over the drum head by tensioning or tuning rods 3, of which six are arranged around the drum. No details are given as to the "flesh-hoop", counter-hoop and other parts for mounting the drum head as these correspond to the normal designs of kettle drums. The tensioning rods 3 (Fig. 3) are provided with a threaded part 4 and screwed into brackets 5 equally spaced around the drum body well below the drum head so that tuning handles 6 are in the usual position, to which players have become accustomed in ordinary hand-tuned kettle drums.

The device for mechanical or simultaneous tensioning of all six rods consists of a connecting chain 7 leading over sprocket wheels 8 on each of the tensioning rods 3 loosely rotatable about the rods so that individual tuning is not interfered with. Locking nuts 9 and 10 are arranged above and below each sprocket wheel 8 so that on tightening the nuts on rods 3, any turn of one rod will result in an equal turn of the other rods, i.e. in simultaneous adjustment of all rods 3. If one or the other rod requires individual tuning it is only necessary to slacken the nuts, or even one nut only, to disengage the sprocket wheel so that the turning of the rod by means of the tuning handle will not affect the other rods as the chain remains stationary.

The arrangement of the nuts has also the advantage of being a simple means for adjusting the position of the sprocket wheels so that they are in substantially the same plane.

The differences by loosening the nuts for

individual tuning are so small, that they have no influence on this position. It might be advantageous to provide the faces of the sprocket wheels and the nuts in contact with each other with friction increasing surfaces either by roughening them or by attaching a friction layer or by using a conical configuration.

To ensure proper working of the connecting chain 7, the chain must be held under tension which is made adjustable by the arrangement of a jockey wheel 11 on a vertically adjustable bracket 12 on drum body 1. The adjustment is made possible by mounting arm 13 of bracket 12 in vertical slot 14 provided in a fitting 15 on the drum body. The bracket is secured in the adjusted position by wing or ring nut 16. The jockey wheel 11 is further adjustable nearer or farther away from the drum body by slide 17 on horizontal arm 18 of bracket 12 and secured in the adjusted position by wing or ring nut 19.

It is obvious that loosening of nut 19 and pushing in of slide 17 will enable the player to discard the chain if desirable. All the parts belonging to the mechanical tensioning device being below the level of the drum head, the drum is by this means immediately converted into an ordinary kettle drum so that any hitch in the mechanical device need not trouble the player. On the other hand, the simple arrangement of a clutch in the shape of the nuts on each tension rod, enables the player momentarily to decide whether to use individual or simultaneous tuning and to be sure that there will be equal tensioning all round when using the mechanical device, as the rods are turned in the same manner in both cases.

In kettle drums of small diameter, especially those with only six tuning handles, it might be preferable to equip a drum with chain vibration damping means, so as to prevent the chain stretched between two adjacent handles from touching the body of the drum. These means (not shown in the drawings) may be small buffers of hard rubber or another similar material fixed to the body of the drum where the chain may come into contact with the body.

#### WHAT I CLAIM IS:—

1. A skin tensioning device for kettle drums for simultaneous tensioning and/or individual operation of tensioning elements around the kettle head, in which individual tensioning rods of the tensioning elements are interconnected by a chain running over sprocket wheels on the rods and in which clutch elements are provided between the wheels and the rods, so that on engaging any of the clutch elements, the corresponding sprocket wheel is coupled with the rod on which it is mounted, and on disengaging the clutch, the wheel is freely rotatable on the rod, and individual tensioning is not interfered with.

2. A tensioning device for kettle drums as claimed in Claim 1, in which the clutching elements are two locking nuts on a threaded part of the tensioning rod clamping a  
5 sprocket wheel between them for coupling wheel and rod.

3. A tensioning device for kettle drums as claimed in Claim 1 in which the tensioning rods are mounted in brackets well below the  
10 level of the drum head so as to permit an arrangement of the sprocket wheels and the interconnecting chain below the surface of the drum head, affording no obstacle to a player's hands and avoiding contact between

the drum skin and grease from the chain.

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4. A tensioning device for kettle drums as claimed in Claim 1, in which the chain interconnecting the individual tensioning elements, is kept under tension by a jockey wheel arranged between two adjacent tensioning  
20 elements on a horizontal radially movable slide on a bracket vertically adjustable in a mount on the drum body.

5. A tensioning device for kettle drums, substantially as hereinbefore described with  
25 reference to and as illustrated in the accompanying drawings.

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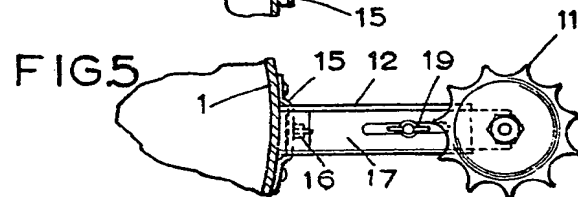
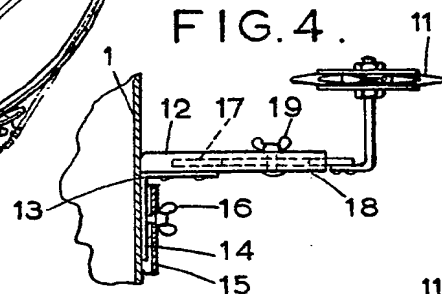
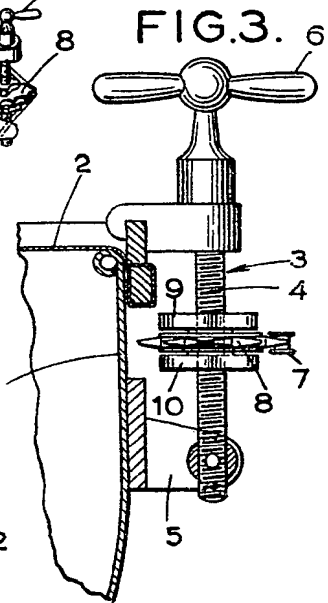
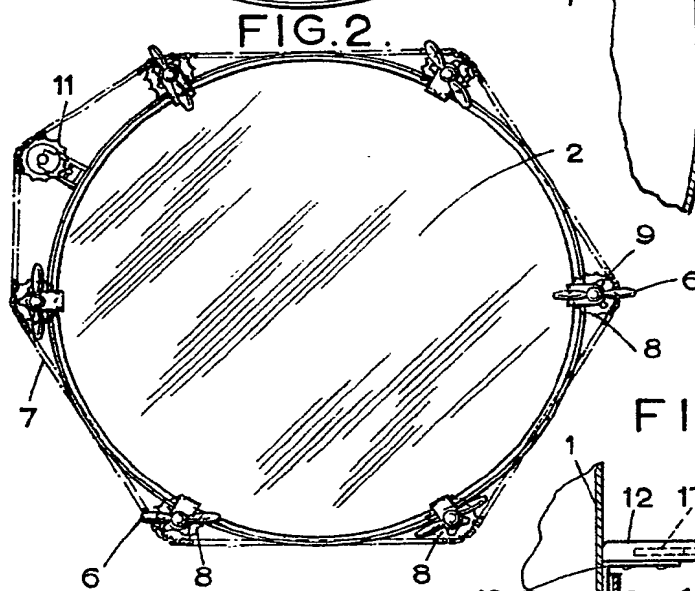
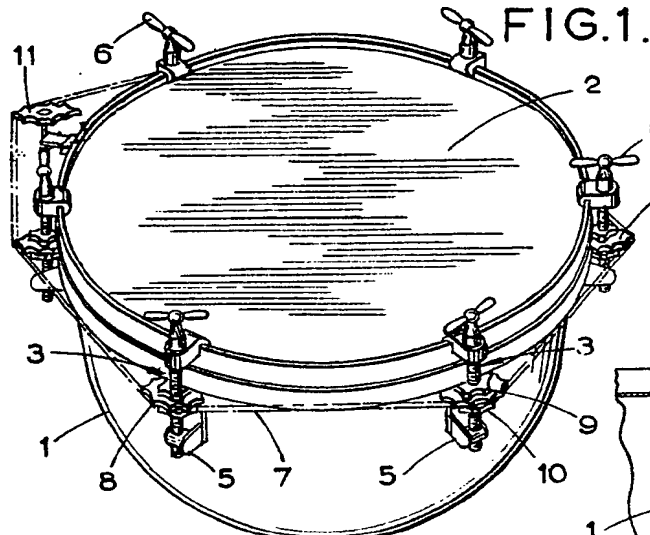
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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale.



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